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THE ZOOLOGIST:

A

POPULAR MONTHLY MAGAZINE

OF

NATURAL HISTORY,

AND

JOURNAL FOR RECORDING FACTS AND ANECDOTES

RELATING TO

QUADRUPEDS, BIRDS, REPTILES, FISHES, ANNELIDES,
INSECTS, WORMS, ZOOPHYTES, &c.

THEIR HABITS, FOOD, RETREATS, OCCASIONAL APPEARANCE,
MIGRATIONS, NESTS AND YOUNG.

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The Name, Paging, &c., of the 'Zoologist.'

From the Rev. P. H. Newnham, M.A.

Allow me to re-echo the voice of those who have expressed opinions against any alteration in the form or paging of the 'Zoologist'—at all events before page 100,000. —*Bagshot*, *July* 16, 1860.

I think the time has now arrived for closing the correspondence on this subject. I have printed every letter that expresses a decided opinion on the question, but have suppressed, as correspondents will be aware, a host of communications resultin more or less directly from my first invitation. For the good will expressed in th published, as well as the suppressed, communications I am truly grateful.

The votes in favour of continuous paging appear almost unanimous; the suggestions for any other mode do not seem to me practicable. I may also observe that most important element in the question has been entirely overlooked: I am wel aware that those who, for eighteen years, have steadily supported the 'Zoologist desire no change; to these such an idea is intolerable: nevertheless it is very difficul to reconcile a new subscriber to the disagreeable necessity of commencing at p. 7113 he sees that he must either have an imperfect work or buy 218 back numbers: eithe horn of the dilemma is unpleasant. Under these circumstances I consider the question of new paging or a new title still worthy my most careful consideration; but will not trouble my readers with it at present.

EDWARD NEWMAN.

THE LATE JAMES FOXCROFT.

It is not, I believe, generally known that the expedition of the late Jame Foxcroft to the West Coast of Africa turned out a complete failure, as far a regards pecuniary remuneration: through ill health, the effect of the climate, h failed to collect a sufficient number of insects to satisfy all his subscribers, much le to repay the expenses necessarily incurred. His son, who was his companion in thi expedition, has returned to England in a very weak state, and has been received as patient at the University Hospital.

Mrs. Foxcroft has incurred liabilities both on behalf of her late husband and h son, and is now endeavouring, by unremitting industry, to support herself by th profits of a small Natural-History business at 47, Great Russell Street, Bloomsbur W.C.; and I am induced to take the liberty of appealing to naturalists on her beha in the hope they will afford her any pecuniary assistance in their power. Mr. Samue Stevens, of 38, King Street, Covent Garden, W.C., has kindly consented to receiv any subscriptions, and will most willingly give any further information respectin Mrs. Foxcroft's circumstances.—Edward Newman.

Observations on Local Museums. By GEORGE MAW, Esq., F.L.S. &c.

THE formation of collections of objects relating to Natural History is so intimately connected with the subjects usually treated of in the 'Zoologist' that I am induced to think that the consideration of our local museums may come within the legitimate scope of your journal. May I be allowed a page or two to note down a few points in connection with these institutions that have presented themselves to my observation, less as expressive of any peculiar views I entertain than for the purpose of awakening others to the consideration of the subject.

I fear local museums cannot be considered as popular institutions; and furthermore, they are never self-supporting, consequently their very existence, to say nothing of their lively prosperity, depends more on accidental circumstances than their possessing any inherent powers of vitality. Where a flourishing museum exists it is not, as far as my own observations go, the necessary result of its efficiency, and if we look behind the scenes shall probably find some kind friend propping it up, either with funds or superintendence. Such help, however thankfully it should be received, is uncertain, and may be at any time removed, and the poor museum resigned to dust, dislocation and decay. How often have we seen a nice institution, built either through the assistance of some kind friend or the natural energy of a country town, well stocked with glass cases and specimens. Perhaps your M.P. patronises it for a few years, or the young surgeon takes up science and the museum to counteract the old literary medical man; may be, some two or three real lovers of Science give it more substantial support. A combination of such circumstances for a time produces an apparently flourishing museum, but in nine cases out of ten its days are numbered. These props removed, your noble institution begins to dwindle, your paid Curator is obliged to be discharged, fresh contributions of specimens are lost, or thrown dusty and uncared for in some back closet, contributors are affronted, their subscriptions fall off, and your funds only suffice to pay an occasional attendant to scrub the floor and dust the Venus in the vestibule once a month. The place is virtually closed; nobody cares for the dead lion, and accumulated debts swallow up the carcass.

Are there not several causes influencing this want of success? Firstly, the objects for which local museums should be established are, I think, rarely understood by their promoters. The exact scope of the subjects to be represented and illustrated are seldom viewed with

BRITISH MUSEUM

sufficient definition, and in the cases where an exact plan of operations is formed at the outset the functions of the museum are generally far too extended. County and district museums, it appears to me, should be rigidly limited to such objects as are found within the district, bearing in mind that your collection should be accumulated for the purpose of representing its Natural History and antiquities, also its manufactures if you wish it.

In many things the utility of an object is dependent on its absolute completeness, no measure of perfection carrying with it a corresponding measure of usefulness. This is especially true with respect to collections of objects illustrative of the Natural History of a district, and presents itself to me as a reason for limiting the scope of our museums to such dimensions as will render this state of completeness within the range of practical attainment.

There is too great a tendency in our local museums to bring together all kinds of objects, the miscellaneous character of which renders it utterly impossible for them to be arranged so as to illustrate any particular subject; and in addition to this negative utility their presence in a local museum absolutely falsifies the collection as an index to the Natural History and antiquities of a district. We have splendid national collections of comprehensive completeness, and what I would avoid in our local collections is the making of "British Museums" on a small scale all over the kingdom. I would not wish to limit too closely the subjects to be included, only that they should be of local interest and represent something. In many cases your county museums would consist solely of objects of Natural History and antiquities, whilst in some districts the collections might be profitably extended to the illustration of local arts and manufactures. I think it will be generally found that no provincial district has the means of procuring materials to form a collection of objects foreign to the locality of sufficient completeness to be either useful or interesting.

One of the causes of this miscellaneous collecting of specimens is the endeavour to make the museums look pretty and attractive. From the character of Natural History and antiquarian specimens this is but very partially attainable or desirable, as few of the objects are in themselves ornamental, and those who would be attracted merely by the pleasing aspect of a museum are scarcely worth enlisting as supporters.

Committees of management would doubtless often be perplexed in this discriminate selection of materials. It is difficult to refuse a proffered donation, and very unpalatable to be told your gift is unacceptable. Mr. So-and-So, who wants to show how clever he is at bird-stuffing, will not understand why you cannot take in his pretty case of humming birds; Colonel Blazer withdraws his subscription because a place cannot be found for the Oriental arms he captured in the Punjab; and the lady from India, who offered the pickle bottle containing the snake that nearly killed her baby, is surprised that you have no interest in it. I would rigidly exclude all such "odds and ends," or at all events keep them quite distinct from your local collection. There might not be any objection to appropriating a separate room for them if you have one to spare. It should contain all the donations of worsted work and wax flowers, pretty tropical birds, monstrous lambs with two heads and chickens with four legs, Indian arrows, big foreign butterflies, Chinese gods, Egyptian mummies, bits of rock crystal, Indian scalps, sets of South Sea things, models of self-acting machinery and discoveries in perpetual motion, deformed kittens preserved in spirits, mummies of animals that have been starved to death and pretty bottles of coloured sand from the Isle of Wight.

Another point I would notice is the present state of isolation from each other of the individual museums. It is scarcely to be supposed that each independent committee of management will intuitively light on the best methods of organization. The systems of arrangement in the different museums vary very much, and it is most unlikely that they are all equally good or equally bad. Would it not be possible to organize them on some one uniform system, composed from a careful collation of the several methods now found amongst them? This could only be attained by organizing a general central committee or directorship; and there are doubtless many of our leading men of science who would undertake in their several subjects the task of collating and arranging the methods on which the various departments of the museums should be organized.

I would not wholly exclude the supervision of the existing committees of management; they would merely have to resign a part of their right to "local self-government" and work under the general central committee. It should include a President and a separate Commissioner for each branch of Natural History, Geology, Botany, Entomology, Ornithology and General Zoology; also one for Antiquities, Local Arts and Local Manufactures, and under these the local committees would work on some uniform approved system.

The "constitution" of this general governing power would be a very delicate question, as the numberless little cliques and parties into which naturalists are unfortunately split up would doubtless stand in the way of a connected organization. Almost every branch of Natural History has a central Society in London, and it appears to me that if they would each undertake the supervision of their several subjects in our county museums that the appointment of the "Commissioners" I propose could not be in better hands. The Linnean, Geological, Entomological and Antiquarian Societies, and the Society of Arts, might unite for this object.

Government superintendence appears to me another practicable method for the accomplishment of the desired object. The subject would not be popularly considered of the same importance as Schools of Art, but as it is to a certain extent related to Education, might be brought within the scope of Government interference. Supposing the local funds now spent on our county museums were kept available, a very trifling extra public expenditure might be the means of placing our local museums on a much better footing than that which they at present occupy. If, as in the case of our national schools, public grants were made to the museums conditionally on their submission to the supervision of the "Inspectors" or "Commissioners," I believe nearly all of them would be placed within the range of the proposed organization.

Another source of weakness to our county museums is the tendency towards the formation of private collections. Excepting where these are formed for a definite object, as accessories to the study of a given subject (and how often are they made without aim or intention), the expense to private people of bringing together Natural History specimens is, to say the best of it, much wasted, and the sources of supply of specimens for public museums exhausted. To counteract this I would propose that our public museums should be organized so as to be the custodians of specimens belonging to private people in addition to possessing specimens, by which means I think a vast number of objects would be brought within the range of a useful organization which would otherwise lie as useless *disjecta membra* in private cabinets.

I make these few suggestions in the hope that some one will take up the question in a more definite form and detail. At present I fear it must be admitted that our county town museums, with some few exceptions, are melancholy specimens of neglect and want of organization, and should, I think, enlist the careful consideration of all who have the progress of Natural History at heart, and who believe that our local museums ought to be a useful element in the progress of Science.

George Maw.

On the Great Rorqual of the Indian Ocean, with Notices of other Cetals, and of the Syrenia or Marine Pachyderms. By Edward Blyth, Esq., F.L.S., &c.

The gigantic whales of the intertropical regions of the ocean have been little studied. The existence of them is even ignored by Dr. J. E. Gray, in his elaborate Synopsis of the known species of Cetacea, published in the 'Zoology of the Voyage of H.M.S. Erebus and Terror,' published in 1846, and again in the 'Proceedings of the Zoological Society' for 1847; but there happens to be a very early notice of them at the northern extremity of the Arabian Sea, in the narrative of the famous voyage of Nearchus, the Commander of Alexander's fleet which sailed from the Indus to the Persian Gulf, B.C. 327. Not only did the ancient navigator encounter a troop of these huge animals, but it would appear that they were at that time not unfrequently stranded on the coast of Mekran, where the Ichthyophagi of that woodless region used their bones for building purposes, as stated in the following passages.

"The generality of the people live in cabins, small and stifling: the better sort only have houses constructed with the bones of whales; for whales are frequently thrown up on the coast, and when the flesh is rotted off they take the bones, making planks and doors of such as are flat, and beams or rafters of the ribs or jaw bones; and many of these monsters are found fifty yards in length. Strabo confirms this report of Arrian; and adds, that the vertebræ or socket-bones of the back are formed into mortars, in which they pound their fish, and mix it up into a paste, with the addition of a little meal."*

Again, "Nearchus says that on the morning he was off Kyiza or Guttar they were surprised by observing the sea thrown up to a great height in the air, as if it were carried up by a whirlwind. The people were alarmed, and inquired of their pilot what might be the cause of the phenomenon; he informed them that it proceeded from the blowing of the whale, and that it was the practice of the creature as he sported in the sea. His report by no means quieted their alarm; they stopped rowing from astonishment, and the oars fell from their hands. Nearchus encouraged them, and recalled them to their duty, ordering the heads of the vessels to be pointed at the several creatures as they approached, and to attack them as they would the vessel of an enemy in battle. The fleet immediately formed as if going to engage, and advanced by a signal given, when shouting altogether, and dashing the water with their oars, with the trumpets sounding at the same time, they had the satisfaction to see the enemy give way; for, upon the approach of the vessels, the monsters ahead sunk before them, and rose again astern, where they continued their blowing, without exciting any further alarm. All the credit of the victory fell to the share of Nearchus, and the acclamations of the people expressed their acknowledgment both of his judgment and fortitude employed in their unexpected delivery."*

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* Vincent's 'Voyage of Nearchus,' p. 267.

"The simplicity of this narrative," continues Mr. Vincent, "bespeaks its truth; the circumstances being such as would naturally occur to men who had seen animals of this magnitude for the first time; and the better knowledge our navigators are possessed of, who hunt the whale in his polar retreats, shows that he is sometimes as dangerous an enemy as he appeared to the followers of Nearchus."

It is somewhat remarkable, however, that I have been unable to discover a single record, from the days of Nearchus to the present time, of the occurrence of great whales in the Indian seas north of the Equator, with the exceptions only of one huge fellow, described to have been 90 feet in length and 42 feet in diameter, which was stranded upon the Chittagong coast in 1842; another of 84 feet in length, which was stranded upon an islet south of Ramri and east of Cheduba on the Arakan Coast in 1851 (as noticed by myself in the Asiatic Society's 'Journal,' vol. xxi. p. 358 and vol. xxii. p. 414); and to these two notices may be added the statement in the Rev. F. Mason's work on the 'Natural History of the Tenasserim Provinces,' that "The whale is found south of Mergui, and Capt. Lloyd named a bay a few miles south of the parallel of 12° North, 'Whale Bay,' from the circumstance he says, 'of its being resorted to by numerous whales, and its being the only part of the coast where I have seen them.'"†

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* Vincent's 'Voyage of Nearchus,' p. 269.

† I have since obtained information of one of the largest size which was stranded near Karáchi some years ago, and also of two during the present year (1859) in Ceylon, one near Galle, the other near Trincomali. Referring to Dr. Kelaart's 'Prodromus Faunæ Zeylonicæ,' published in 1852, we find it there stated that "Whales are very

They are, nevertheless, so far from being rare, indeed the sight of a shoal of these huge animals is so familiar a spectacle to mariners, that to this very circumstance—combined with the fact of their being of little commercial value—may be attributed the extraordinary absence of such memorial. Had the appearance of a shoal of enormous whales in the Arabian Sea or Bay of Bengal been a phenomenon of unusual occurrence, it would unquestionably have been recorded from time to time.

From reliable information which I have obtained I am enabled to state with confidence that they are still occasionally observed within the Persian Gulf, rarely however in shoals, but generally one or two stragglers at a time. It may be concluded, therefore, that a shoal of them may yet be now and then seen off the coast of Mekran, at the head of the Arabian Sea, a little further to the East, where Nearchus and his fleet encountered them; and that a carcass may still occasionally be stranded on the same rarely-visited coast, and the bones even yet be applied to like purposes by the scanty fish-eating population of that inhospitable woodless region.

It appears, from much inquiry I have made on the subject of competent observers that only one species of whale is met with in these seas, and all accounts agree that it is a "finner," "fin-back," "razor-back," "pike-whale" or rorqual (*Balænoptera*) of enormous size. I cannot learn that a "hunch-back" (*Megaptera*) has been observed north of the Equator. An observant nautical friend writes word that "the whale most generally seen in and about the Bay of Bengal, often in numerous

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rarely seen. A dead one is occasionally stranded. The skeleton of one cast ashore, some twenty years since, at Mount Lavinia, is still in the Museum at Colombo." Sir J. Emerson Tennent, in his recent work on Ceylon, mentions their being frequently captured within sight of Colombo. Since the above was written, I have received a letter from the Rev. H. Baker, jun., of Alipi, St. Malabar, in which that attentive observer states, "Whales are very common on the Coast. American ships, and occasionally a Swedish one, call at Cochin for stores during their cruises for them; but no English whalers ever come here that I have heard of. One said to be 100 feet long was stranded on the coast. I saw some of the vertebræ and ribs about three years ago. Last year another, 90 feet long, got among the reefs at Quilon, and was murdered by some hundreds of natives with guns, spears, axes, &c., and was cut up and eaten (salted and dried as well as fresh). The Roman Catholic fishermen of the coast pronounced it 'first chop beef.' The Maldives and Seychelles are said to be the head-quarters of the whalers who seek for these whales. I am sorry I never noticed the jaw-bones sufficiently, for I saw them on the beach. We have the dugong on the coast, and porpoises come up the back waters in March when they are salt, but the susu I do not think is known here."

herds, exhibits the dorsal fin; at least," he adds, "all that have come under my observation, and if my memory serves me correctly, the dorsal fin is about one-third or a little more from the head, and is well developed." To cite further communications of the kind would be mere repetition.

No other Balænidæ attain the dimensions of the largest rorquals, including the known examples stranded within the Bay of Bengal; and the peaked dorsal fin is of itself a distinction. Moreover, the finless or right whales are restricted to cold latitudes, where only, it would seem, they can obtain a sufficiency of their peculiar food, the rorquals subsisting mainly on Cephalopoda. According to Scoresby, the great Northern or Greenland whale (*Balæna mysticetus*) "has never been seen beyond the limits of the Arctic Ocean." Another descends more southward in the comparatively cold oceanic region of the Northern Pacific. In the southern hemisphere there would also appear to be two species recognised as such by seamen with whom I have conversed, Balæna australis of Desmoulins and B. antarctica of Gray. In the Timor seas, black whales in addition to sperm are stated to exist in considerable numbers; but those black whales I have been assured are "hunch-backs," which are much more nearly akin to the "finners" or rorquals, though I suspect them to be a small kind of cachelot subsequently noticed under the name of Euphysetes Graii.

The locality known as Wal-visch (*i. e.* whale-fish) Bay, latterly spelt Walwich, on the East coast of South Africa, is considerably within the southern tropic; but the name may well refer to cachelots or sperm whales. In a short account of Timor, published in Moor's 'Notes on the Indian Archipelago,' we read that the coast people of the island of Selvi (one of the Timor group) "are such expert fishermen that they constantly take the species of whale called black-fish, which are often 20 feet long, and which afford oil inferior only to the spermaceti, having the same substance in the head as the spermaceti whale. They do not boil the blubber, but expose it to the sun in an inclined situation with a ditch at the bottom, into which the oil drains." A small species of the Physeter group must be here intended; but the black-fish of the Bay of Bengal is my Globicephalus indicus. As for the sperm-whale fishery in the Eastern Seas, the Sulu or Mindoro Sea between Borneo and the Philippines, in from 50° to 100° East latitude, is at present I believe the grand resort of the whalers.

Sperm whales were formerly hunted off the shores of the Antilles. Thus, the excellent observer, Mr. Richard Hill, of Spanish Town, Jamaica, writes to his friend, Mr. P. H. Gosse, that "Moreau de St.

Meri, in his 'History and Description of the old French Colony of St. Domingo,' relates that in his time (1785), in the months of March, April and May, as many as five-and-twenty vessels from the North American States could be seen on the coast off Sale Trou, near Jacmel, fishing for cachelot whales, and, he adds, for souffleurs (*Balænoptera*); and that this fishery was with equal spirit pursued within the gulf to the west of the colony; that is, within the bight, in which I saw the cachelot breach. The whale-fishers resorted to Turk's Island to boil their oil.*

Balæna msyticetus is generally believed to be the largest of the true Balænæ, and it rarely attains to 70 feet long, according to a very high authority, the late Rev. Capt. Scoresby; but Mr. Polack, whose work on New Zealand contains much original matter concerning the great cetals of the Southern Ocean, states that B. antarctica "not unfrequently attains the length of 70 feet, and the breadth where the flipper is placed (which is the thickest part) is often 18 feet. The female is invariably the larger." B. australis is stated rarely to exceed fifty feet in length. Again, the head in Balæna approaches to one-third of the entire length, while in the "finners" and "hunch-backs" it constitutes about a fourth. Lastly, the configuration of the chief bones of the "flipper" or limb, is very different in the Balænæ to what is seen in the others, as shown by Cuvier's figures in the 'Ossemens Fossiles.' These various considerations enable me to pronounce with confidence on the genus of the two great individuals which have been stranded, of late years, on the eastern shores of the Bay of Bengal.

The following notice of the 90-foot specimen (as alleged) that was cast upon the Chittagong coast in 1842 (in about lat. 21° North.), is taken from a letter that appeared in the 'Friend of India' newspaper for September 15th of that year. It appears that "early on the morning of the 15th of August, the attention of the people of Cox's Bazaar and those of Muskal Island were attracted by something in appearance like a capsized hull of a large vessel floating on the surface of the sea, coming towards the mouth of the Muskal river, and when it approached near the land they perceived that it was a living creature, by its continually spouting up water into the air; and by the middle of the day it cast itself on the shore of the west side of Muskal Island. By the assistance of the flood and the surf of the sea it was brought completely on shore, where, as soon as it was landed, it appeared to be in great distress, for it roared very loudly, similar to the roar of an old elephant. As soon as all the Mugh inhabitants, both of Cox's Bazaar and Muskal Island, heard of the circumstance, they all sallied to the spot, and found that it was a large whale. They then measured it, and found it to be 60 cubits (equal to 90 feet) long and 28 cubits (equal to 42 feet) in circumference. They then cut up the animal, and each one helped himself to a large portion of the blubber, from which a quantity of oil was extracted. Two flakes of its gill [? flakes of baleen] were brought to me," remarks the writer, "which are indeed a great curiosity." The foregoing details were obtained from a Mugh Christian, who is not likely to have remarked the presence of a "back-fin."

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* 'A Naturalist's Sojourn in Jamaica,' p. 353.

The other recorded example, stated to have been 84 feet in length, was thrown up dead upon Juggu or Amherst Islet, about 2° further south, during the rainy season of 1851. A few of the bones were collected in the following year by the present Major T. P. Sparkes, then Assistant Commissioner of Ramri, and were presented by him to the Society's museum. They consist of the two rami of the lower jaw, a right rib (probably the third of the series), the left radius, and five vertebræ. The proportional length of the radius indicates the animal to have been a Balænoptera or rorqual, while the remarkable slenderness of the lower jaw suffices to prove it a distinct species from any hitherto described rorqual.

The only whale, indeed, that I can find to bear comparison with it is one described in the 'Philosophical Transactions' (vol. i. p. 11) as cited by Dr. Gray, who refers it to his Megaptera americana, founded upon the tracing of a drawing of a species stated to be common off the Bermudas (an almost subtropical locality). That whale is thus described:—"Length of adult 88 feet; the pectoral 26 feet (rather less than one-third of the entire length); and the tail 23 feet broad," &c. From the medium length of the radius of the Indian animal the species must be very different; in fact, a Balænoptera as distinguished from a typical Megaptera or "hunch-back."

But the lower jaw is remarkably slender for a Balænoptera, even more so than in Balæna mysticetus, as viewed laterally, while the coronoid process is well developed, as in Gray's figure of the lower jaw of Balænoptera rostrata; the base of the jaw, however, posterior to the process is not deeper, as in that figure, but the reverse, and the jaw is proportionally much longer anterior to the process. The entire length of each ramus is within less than 2 inches of 21 feet, showing the head to have been about a fourth of the total length. Vertical diameter, 3 feet in advance of summit of coronoid, 18 inches (measured by callipers); at 3 feet from tip, 13½ inches; and where most contracted posterior to the coronoid, 15 inches only; extreme depth, at coronoid process (inclusively), 26¾ inches. From middle of coronoid to summit of condyle posteriorly, in a direct line, 37½ inches. The shaft of the ramus is more approximatively of the same thickness throughout than in Balæna mysticetus, tapering quite evenly.

The radius is 38¾ inches long, nearly similar in shape to, but is more curved than, that of Megaptera poeskop. The shape of this bone in Balæna (as figured by Cuvier) is remarkably different.

The rib is proportionally small, measuring only 8 feet 2 inches round its curvature to superior articulation. It is probably the third of the series, on the right side.

Of the five vertebræ two are dorsal about the 6th and 7th; but they have been much hacked and are mutilated of their processes. Body of the vertebra (hind surface) 11½ inches deep by 15 inches broad. A lumbar vertebra, probably the first, has the body (measured posteriorly) 13½ by 16½ inches broad; antero-posterior diameter, 14 inches; spinal apophysis 27 inches or a trifle more, allowing for the extreme tip which is broken off) measured from the front, and sloping backward at an angle of nearly 45°.* Another lumbar vertebra, probably the 3th or 6th, with spinal apophysis 8 inches in antero-posterior diameter, and lateral processes 12 inches long and 8½ inches broad. Lastly, a caudal (?) vertebra (I mean one of the series with inferior V-bones attached; not one of the small caudal that support the tail-flukes) about the 4th; the body (posteriorly) 15 by 17½ inches broad.

In the 'Asiatic Researches,' vol. xv. Appendix, p. 34, "a large jaw-bone of a whale" is recorded as having been presented by Mr. J. Kyd. It was only the basal portion of one, and is now much injured by long exposure to the weather out-of-doors; but it appears to have belonged to a rather smaller individual of the same species, which I think we may safely venture on designating Balænoptera indica.

In 'Asiatic Researches,' vol. xvii. p. 624, "the vertebræ and cranium of a whale" are recorded as presented by G. Swinton, Esq. These are are now much damaged, and mostly valueless, from long exposure to all weathers—the result of want of accommodation for such bulky specicimens in our excessively over-crowded museum building. The length of this whale was about 30 feet, of which the head was about a fourth.

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* In the figure of the skeleton of the great northern rorqual in the volume on Cetacea in Jardine's 'Naturalist's Library,' pl. 5., the apophyses of the dorsal vertebræ are represented to slope forwards!

Probably the young of Balænoptera indica, rather than another and smaller species. A fine skull of the same, with rami of the lower jaw measuring 10 feet, was obtained by the late Professor H. Walker from a friend in Arakan, and is now in the museum of the Calcutta Medical College. It is most probably from the Bay of Bengal. In the Society's 30-foot specimen the bases of the lower jaw are mutilated, only the shafts remaining; but in the Medical College skull the coronoid, &c., of the lower jaw accord with those of our 21-foot jaw.

There are other remains of Balænidæ in our museum, the origin of which I have been unable to trace, at least when and by whom presented; but they were in the collection prior to my taking charge of it in 1841. Portions of one skeleton appear to be referable to Balæna australis of Desmoulins, le Grand Balein du Cap of Cuvier, or ordinary southern right whale. These consist of three vertebræ, a pair of humeri and a pair of scapulæ. One humerus and one scapula have now been injured by long exposure out of doors; but the others are in tolerably good preservation, and well agree with Cuvier's figures in the 'Ossemens Fossiles;' the acromion being present only in the injured scapula. The scapula measures 41 inches long by 47½ inches in the extreme breadth. The humerus 22 inches long by 15 maximum and 9½ inches minimum breadth. Of the vertebræ, one is worked into a fancy chair, and is an uninjured first dorsal; body 8½ by 10¾ inches broad, measured posteriorly; the lateral processes 12 inches long. Another is probably the third dorsal; and the remaining one is probably the 5th dorsal, 13½ by 14 inches posteriorly, and 12 inches in antero-posterior diameter; the spinal apophyses of both are broken away above their alæ. It will be understood that I merely adjudge these to be portions of the same skeleton.

Of two pairs of the internal ear of "the whale," one pair is likely to belong to the last-noticed individual, the other pair perhaps to the 30-foot Balænoptera, which, however, is less probable, judging from their great size. It is not likely that they appertain to the same species, as one pair is nearly equal in size, while in the other the left is much larger than the right. From this great inequality I am inclined to suspect that the latter pair belong to a cachelot or sperm whale. A large left internal ear, without a right to match it, is probably that noticed in the 'Journal of the Asiatic Society,' vol. v. p. 374, as having been presented by the late James Prinsep; and there is even another left cochlea only. On present data I cannot venture on attempting to identify the precise species or even genera to which these specimens belong.

The cachelots or sperm whales (*Catodontidæ* of Dr. Gray), I humbly consider to constitute a subfamily rather of Delphinidæ, especially since the discovery of that very remarkable small species, the Euphysetes Graii of Mr. W. S. Wall, Curator of the Australian Museum at Sydney. That gentleman well argues the matter, in his 'History and Description of a New Sperm Whale,' &c., of which he favoured me with a copy. Unless the ear-bones before referred to belong to this group we have only five teeth of a sperm whale. By whom presented I have been unable to discover.

Mr. Polack has a curious statement regarding the sperm whale, to which I invite attention. He says, "The cachelot is covered with an outer cuticle, as transparent as gold-beater's skin, beneath which it is covered with hair perfectly sleek and black, covered with an uliginous matter, the texture and length resembling the clothing of the seal tribe."

Of ordinary Delphinidæ, one of the most common species in the Bay of Bengal is that generally known as the black-fish to seamen, and named by me Globicephalus indicus in the 'Journal of the Asiatic Society,' vol. xxi. p. 358. This was first noticed in vol. xix. p. 426; a large herd or "school" (*i. e.* shoal) of these animals having been carried into the salt-water lake east of Calcutta during the month of July, 1852. It is remarkable that two specimens which I have since obtained were procured during the same season of the same year, *viz.*, one taken in the Hugli near Serampore, 6½ feet long, in 1858, and a newly-born young one during the year 1859, which was brought to the Calcutta fish bazaar. The species is well distinguished from G. Deductor of the Atlantic, of which we have a fine skull of an old animal for comparison. The inter-maxillaries of the Indian species are shorter and one-fourth broader, and the teeth are considerably stouter. Colour of the animal, uniform leaden-black, slightly paler underneath. Length of an adult male 14 feet, 2 inches; the flippers 2 feet long, and 6 inches in greatest breadth. Length of dorsal fin, 2¼ feet, and height 11 inches. Breadth of tail-flukes 3 feet; and from vent to cleft of tail, 4 feet 10 inches. Adult female rather smaller. The skeleton of a female set up in our museum has a series of 49 vertebræ, additional to the united cervical. There are 11 dorsal or costal, 12 lumbar without the articulated V-bones, 16 with the latter, and 10 small caudal within the tail-flukes. We possess skeletons of the adult male and female, the latter set up; the 6½-foot example mounted as a stuffed specimen; and the new born young one as a skeleton. There is also a skull of this species in the Museum of the Calcutta Medical College.

I had much trouble in securing our two skeletons of this fine cetal. The animals were floundering about in all directions in the shallow water, and groaning painfully (*vide* 'Journal of the Asiatic Society,' vol. xix. p. 426). From what I afterwards learned, there must originally have been several dozens of them, which the natives towed off into the river as they died, having no notion of extracting oil from their carcases. The weather was terrifically hot; but I succeeded the first day in securing two pairs of the largest, male and female, and had them safely tied up towards evening for operations on the day following. They were all cut adrift during the night; and the work had to be begun again; and I considered myself fortunate in succeeding so well as I did in obtaining two perfect skeletons for the Society's Museum.

There is a Globicephalus also in the China seas, of which a description, with details of its anatomy, is published in the 'Chinese Repository' for January, 1833, p. 411. The specimen (a male) was taken near Leu-chen; and, though designated G. Rissii by its describer, is probably a distinct species. Colour black above, lighter on the belly. Length 9¾ feet. "Head 18 inches long, and average circumference 3 feet. There were only five blunt and eroded teeth in the lower jaw. The dorsal fin was triangular and almost immoveable, 15 inches long; pectorals 14 inches; and all remarkable for their firmness and strength." "This species does not spout a jet, though their breathing is distinctly heard at a short distance. They swim near the surface; and we had several opportunities of observing their habits during the voyage. The sailors term them cow-fish."

Another small cetal of which we possess a stuffed specimen is that described as Delphinus perniger, *Elliott* (Journal of the Asiatic Society, vol. xvii. 250), from the Bay of Bengal; the species distinct from any of those described by Dr. Gray, and having the teeth proportionally large.

Of other cetaceous remains we have the Narwhal tusk presented by Mr. Lumsden (Asiatic Researches, vol. xiv. Appendix), the skulls recorded in the 'Journal of the Asiatic Society,' vol. viii, p. 969, from Greenland, and the two skeletons from Norway (Journal of the Asiatic Society, vol. xv.; Proc. vol. ix). Also two skulls of Steno rostratus of Cuvier; one of an animal taken near the Nicobar Islands, the other from the Red Sea, and a skull which seems to be that of S. attenuatus of Gray (Zoology of the Voyage of H.M.S. Erebus and Terror, Cetacea, pl. 28), being probably that mentioned of "a dolphin found near the Isle of France," (Asiatic Researches, vol. xii.; Appendix, vol. xxiv). Lower jaw 14 inches. Teeth $\frac{41}{41}$. Another lower jaw, "from the high seas," with series of 38 teeth, presented by Mr. C. Hervey (Journal of the Asiatic Society, vol. x. p. 937), and two skulls, toothless, and wanting the lower jaw, with series of 39 tooth-sockets. Length 15 and 15½ inches. Origin unknown, but presented by myself. All of these would appear to be the same, but the left ramus of a lower jaw, with series of 43 teeth, is vertically much deeper at the symphisis, and therefore undoubtedly appertains to a distinct species.

Also a skull according with Delphinus Eurynome of Gray, and another with D. obscurus of Gray, which, together with the Red Sea example of Steno rostratus, were made over to the Society's Museum from that of the Calcutta Medical College in 1843. Lastly, the skull of a dolphin affined to D. Delphis of Linneus, and "procured during the voyage from England to India." It was presented by the late Mr. R. W. G. Frith, and is probably an undescribed species. With a general resemblance to that of D. Delphis the intermaxillaries, united as far as the middle of the rostrum, are vaulted, so that the section of the united middle portion forms a complete semi-circle, rising abruptly from their maxillaries, and being there only as broad as the exposed portion of each maxillary; probably a distinctive specific character. Teeth $\frac{52}{50}$—$\frac{55}{50}$. If confirmed as a new species, I propose calling it Deilephila Frithii.*

Of the Gangetic susu (*Platanista gangetica*) we have a stuffed male, presented by M. Alfred Duvaucel, a stuffed female, and also a stuffed example of a young female procured by myself. With skulls of adult male and female, the former toothless, and presented by Dr. Wallich. The entire skeleton I have long been trying to obtain. There is a fine series of skeletons of this species in the Museum of the Calcutta Medical College.

Though abounding in the River Hugli the susu is extremely difficult to procure, at least in the vicinity of Calcutta; and too often when a fine example is taken the captors saw off the rostrum, rendering it useless for a museum specimen. In what I believe to be the adult male, the symphisis of the lower jaw measures 17 inches; in the adult female only 12 inches; the rostrum being thus 5 inches longer in the former.

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* Since the above was written Capt. Jethro Fairweather, commanding the ship 'Forfarshire,' has favoured us with the skull of a small but not young Steno, which seems to be S. attenuatus of Gray. It was procured not far from the Sandheads, out of an innumerable herd of them, "as far as the eye could reach in all directions," and was of a paleish lead-colour; not therefore, however, the Delphinus malayanus var. plumbeus, which is a much larger species common in the Bay. Teeth $\frac{39}{41}$—$\frac{40}{42}$. Major R. C. Tytler, also, has presented a skull taken west of the Cape of Good Hope, which agrees, or very nearly so, with the two heads minus the teeth and the lower jaw, mentioned in the text.

The susu ascends very high up the rivers, if not quite to the foot of the mountains. Hardwicke's drawing was "made from a living specimen 1000 miles above Calcutta." Major Tytler assures me that he has seen them about 40 miles up the Jumna, and also at Raj-ghât Mundi in the Dehra Dhoon; likewise in the Indus and Sutlej near Ludiána; but these were doubtless of the species proper to the Indus and its tributaries. The Gangetic susu is common throughout the valley of Asám, in the Brahmaputra and its tributaries. Whether inhabiting the Irawádi and other Burmese waters I am unaware; but have been assured that no such animals exists there. From the minuteness of its eyes this creature is obviously adapted for turbid rather than for clear water; and it has never been observed out at sea. It is migratory, as it occurs towards the Gangetic outlets only in the cold season, as remarked by Dr. Cantor; but at what particular season it is observed in the Upper Provinces I have been unable to ascertain.

The skull of a susu from the Indus, presented by the late Sir Alexander Burnes, is of a conspicuously distinct species which I designate Platanista indi, of Blyth. Maxillary crests wanting in the specimen. Larger and much more robust than P. gangetica, with the same number of teeth, which are more than twice as stout as in the other, being much ground down by attrition in the specimen. Length of skull $20\frac{1}{4}$ inches; greatest width at zygomata $9\frac{1}{4}$ inches; depth of the two jaws, with teeth *in situ*, measured in the middle of their length $3\frac{1}{4}$ inches, in P. gangetica barely $1\frac{3}{4}$ inches. Length of symphysis of lower jaw 11 inches. Depth of zygomatic arch $2\frac{3}{8}$ inches.

A coloured figure of probably the identical individual that furnished the skull above described occurs among the Burnes' drawings. The rostrum is represented as short in proportion to the length of the animal, and the neck to be more contracted than in the Gangetic species, which may be an error of the draughtsman. Colour also much paler; the lower parts dull albescent, abruptly defined in a line from the gape to the tail-flukes. The specimen is evidently a female; whence the male should have a longer rostrum. The dimensions assigned are "7 feet long by 1 foot 3 inches deep.' Rudimentary dorsal fin as in the Gangetic species. Further information respecting the susu of the Indus and its tributaries is very desirable.*

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* The existence of the susu of the Indus, as a particular species, is referred to in Professor Reinhardt's admirable paper on the Gangetic species, a translation of which

Of the Syrenia, or Gravigrada of De Blainville, the Cetacea herbivora of the Cuviers (which Professors De Blainville and Owen have shown most satisfactorily to be much more nearly akin to the quadrupedal Pachyderms*), we have only the genus Halicore or duyong. The skull and the lumbar and caudal portion of the vertebral column of an adult I made out long ago to pertain to H. australis of Owen, the Australian duyong as distinguished from that of the Indian Seas, or H. indicus of F. Cuvier; but how we came by an Australian specimen was an enigma only very recently solved. In Corbyn's 'India Review,' vol. iii. p. 46, there is a memoir of the late Dr. Robert Tytler, of the Bengal Medical Establishment; and in this memoir we read that "During his various expeditions Dr. Tytler made some valuable collections of natural curiosities, of which he largely and liberally contributed to the Asiatic Society of Calcutta. In 1827 he read a paper on the duyong or dayoung. The bones of four different individuals were picked up by Dr. Tytler at Raffles Bay, on the north coast of New Holland. In one instance they were sufficiently numerous to form nearly an entire skeleton of the animal. This creature is not uncommon in the Eastern Archipelago, but its existence on the coast of New Holland was made known for the first time by Dr. Tytler." Hence, obviously, our bones of Halicore australis.

The existence of a duyong on the Australian coast was recognised so long ago as by Peron, in his account of the 'Voyage of Discovery to Australia,' made by the corvettes "Geographie," "Naturaliste," and goelette "Casuarina," in 1800—4, edited by M. Francis Peron, naturalist to the expedition, and published in 1807. Dampier mistook them for hippopotami; but he only saw a head, "half decomposed by digestion," and the tusks doubtless helped to mislead him, for little in his time was known of hippopotami beyond their tusks, our accurate acquaintance with this animal being still quite recent.

Peron only saw a few teeth; but he mentions one of these animals which "lay extended on the beach of 20 to 22 decimetres [6½ to 7 feet English] in length, already half-decomposed by putrefaction, and which appeared to our sailors," he adds, "so different from the Phocæ that they thought they ought to bring its remains to me. Unable to bring the entire head, on account of the extreme stench which it exhaled,

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(by the late Dr. Wallich) appears in the 'Annals and Magazine of Natural History' for 1852, pp. 162, 279, and *vide* p. 291. An excellent figure of the animal accompanies that paper.

* *Vide* 'Proceedings of the Zoological Society' for 1838, p. 45, &c.

they tore from it seven teeth, which they offered me. It was easy for me to discover that these teeth belonged to a herbivorous animal. They proved, in fact, to be the teeth of a dugon, a mammiferous sea-animal but little known, and which appears to be confined to the Indian Ocean." He then cites Leguat's account; but this worthy writer observed them at the Mascarine Islands (Mauritius, Rodriguez, &c.), where they are now, so far as I can learn, quite extinct, and the species may have been different, perhaps that from the Red Sea, styled H. Tabernaculi by Dr. Rüppell; it may, however, still be found off Madagascar and the neighbouring coast of Africa.

Leguat, with his party of French Protestant refugees, settled on the then uninhabited island of Rodriguez in 1691, and remained there for two years. His account is celebrated for the description of the now extinct solitaire, and his accuracy in other matters has been established. He mentions duyongs as inhabiting the shores of the Mascarine Islands "in great numbers. They attained to 20 feet in length, and fed in flocks like sheep in three or four fathoms water, making no attempt at escape when approached. Sometimes they were shot at the end of the musket, sometimes laid hold of and forced on shore. Three or four hundred were met with together, and they were so far from shy that they suffered themselves to be handled, and the fattest were thus selected. The larger ones were avoided, not only on account of the trouble they gave in the capture, but because their flesh was not so good as that of the smaller and younger ones." *

The H. Tabernaculi of the Red Sea Dr. Rüppell "saw swimming among the coral banks on the Abyssinian coast near the Dalac Islands. The fishermen harpooned a female, which he dissected, 10 feet long. The Arabs stated that they live in pairs or small families, that they have feeble voices, feed on Algæ, and that in February and March bloody battles take place between the males, which attain to 18 feet," &c.†

Sir Stamford Raffles remarks that "the duyongs are seldom caught at Singapore above 8 or 9 feet in length; but how much larger they grow is not ascertained, as, when they exceed that size, their superior strength enables them to make their escape."

Barchemitz remarks of those of Australia that "Each of these enormous fish is more than 21 feet long; the male is a little larger than the female. Their heads resemble that of an ox. They live upon a green grass which grows upon the banks."

Some of the sailors of the expedition that Peron accompanied were

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* Penny Cyclopædia,' article "Whales." † Id.

once "alarmed by a terrific howling which resembled the roaring of a bull, but much stronger, which seemed to come from the neighbouring reeds." This was near the Swan River; and it may be remarked that Mr. Fraser, in his description of the Swan River, when it was surveyed by Capt. Stirling in 1826, notices that "while attending to a boat on the river I distinctly heard the bellowing of some huge animal similar to that of an ox, from an extensive marsh further up the river." Peron justly remarks that "this terrific roar could only belong to one of those great animals which the Indian Ocean nourishes within its seas; but of all those with which we are acquainted the dugon alone presents analogous dimensions to the terrific noise which it makes." Now the Arabs described to Dr. Rüppell that the duyong of the Red Sea had a feeble voice!

The Australian duyong is met with on the north coast of that island-continent, within the great barrier reef, at Swan River on the western side, and at Moreton Bay on the eastern. It certainly appears to be a distinct species from that of the Malayan Seas; but additional species to these two are less satisfactorily established, and the total disappearance of these animals from the vicinity of the Mascarine Islands is worthy of attention, and may be borne in mind with reference to the extraordinary fact of the seeming extinction of the Rytinus Stelleri in the North Pacific. We want information, however, respecting duyongs at the various coral groups of the Indian Ocean, within ten or twelve degrees of the Equator. The same species may well inhabit the whole of them. It is remarkable that the Malays consider that two species of these animals exist.*

I am not aware that it is yet generally known to zoologists that the H. australis differs conspicuously in external colouring from H. indicus, but such appears to be the fact from the following notice:—

"In Moreton Bay and on the neighbouring coast the aborigines eagerly pursue the duyong, a species of small whale, generally known to the colonists as the 'sea-pig.' This animal has a thick smooth skin, with a few hairs scattered over its surface. Its colour is bluish on the back, with a white breast and belly.† In size the full-grown male has never, we believe, been found more than eighteen or twenty feet long. The food of the duyong consists chiefly of marine vegetables, which it finds at the bottom of inlets, in comparatively shallow water, where it is easily captured. Its flesh resembles good beef, and is much esteemed. The oil obtained from its fat is peculiarly clear and limpid, and is free from any disagreeable smell, such as most animal oils are accompanied with. It has not yet been produced in sufficient quantities to acquire a recognized market value. The blacks devour the carcase of the duyong roasted, after expressing the oil for sale to the colonists."*

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* *Vide* 'Proceedings of the Zoological Society' for 1838, note to p. 43.

† M. F. Cuvier figures the Malayan duyong of an uniform pale slaty or plumbeous colour, with some darker blotches on the sides. In the atlas to the 'Voyage of the Astrolabe' the duyong is figured of a pale fulvous hue with white under parts, which laterally are blotched with the colour of the back. Hardwicke figures it of an uniform slaty black, albescent on the head (unless this be meant for shine or reflected light). There is a wood-cut showing the mode in which the female carries her young in Sir J. E. Tennent's work on Ceylon.

In a recent anonymous work, entitled 'Rambles at the Antipodes,' &c., published in 1859, the duyong is mentioned as the yangan of the aborigines. This author, like every other (from the time of Sir Stamford Raffles and before), describes the meat of the duyong to be excellent, "when fresh having the taste of tender beef, and when salted nearly resembling bacon." Hence, perhaps, the apellation 'sea-pig.' The duyong, it is added, "yields an oil, which is found in cases of scrofula and other diseases to be more efficacious than cod-liver oil." The latter would seem to be rising in demand; worse luck for the animal! A friend informs us that it is most difficult to obtain even a portion of duyong meat at Malacca; as no sooner is a specimen captured than it is at once cut up and cooked by the Malays. Hence the difficulty of obtaining museum specimens.

Of the Indian duyong we possess a small stuffed specimen, presented by the Batavian Society in 1845; and the lower jaw, scapulæ, and four ribs of a larger but still young individual, recently found in an Andaman hut. The Andaman Islands are the most northern locality as yet ascertained for the species in the Bay of Bengal; and it must be rare there, or the bones would more frequently be found to decorate those rude lairs (huts they cannot justly be termed), together with the skulls of the small Sus andamanensis and of turtles. On the west coast of Ceylon Mr. Layard notices that duyongs are common in the Gulf of Calpentyn; the flesh of this animal being there also held in esteem. Sir J. E. Tennent, again, remarks their occurrence in all the salt-water inlets from the Gulf of Calpentyn to Adam's Bridge. They are found likewise along the shore and in the salt-water inlets of the Concan, where, as not long ago ascertained by the Rev. J. Baker, jun., of Mundakyum, Alipi, on that coast, they are known to Europeans as the seal. That gentleman took some pains to discover what the animal could be, and found that it was the duyong, which came to feed on the vegetable matter found about the rocks, as well as to bask and sleep in the morning sun (!). Forbes, in his 'Oriental Memoirs,' gives an account of these so-called seals as "abounding in the salt-waters of Travancore;" but his description of them is either inaccurate, or it must refer to some other animal (which is exceedingly unlikely). He says, "The Travancore seal has a round head, short ears, thick neck, tapering body, and flat tail, like a fish; it is web-footed, and the skin covered with a soft oily hair. Seals," he adds, "vary in size and appearance in different countries; at Anjingo they seldom exceed 4 feet [!] in length. They are gregarious and sociable; form parties on the banks of the rivers, but always plunge in at the approach of a stranger." *

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* 'The Three Colonies of Australia,' (p. 337), by Samuel Sidney.

In our Andaman specimen of a lower jaw the first molar has a minute forked crown, and proportionally very large root. Then follow three deciduary pre-molars, ground to a perfectly flat surface; and behind these a tuberculated permanent molar, which had nearly pierced the gum when the animal came by its death.

A complete skeleton of an adult duyong would be extremely acceptable for the Society's Museum; no matter how roughly prepared, provided no bones are wanting. Skulls, also, of adults of both sexes are desirable.

EDWARD BLYTH.

Zoological Notes from Aneiteum, New Hebrides.

By JOHN MACGILLIVRAY, Esq.

Description of Procellaria torquata, a new Species of Petrel.—Above light gray, especially on the back, shoulders and upper tail-covers; the feathers in the two first situations often margined with white. Crown, back of head and neck and auriculars sooty brown, which colour behind gradually blends with the gray of the back, and in front extends across the breast from each side to form an indistinct band. Wings projecting an inch beyond the tail, dark sooty brown; the secondaries tinged with gray. Tail very evenly graduated, of twelve feathers, grayish brown. Face, cheeks, chin and throat white; on the sides and front of the head the white merely tips the feathers, the base and centre of each being dark, giving a speckled appearance to the rest of that region. Lower surface white, except the undefined pectoral band; and on the sides, flanks and under tail-covers the feathers are minutely speckled with gray, and sometimes have also a dark central line. Under wing-covers white, showing as conspicuous a mark when the bird is on the wing as in P. Cookii, to which and to P. mollis it is closely allied. Bill black; tarsi fleshy black; toes and webs (except basal portion of latter, which are flesh-coloured) black. Total length $4\frac{1}{4}$ inches; extent of wings 28; wing $8\frac{1}{2}$; tail $4\frac{1}{4}$; bill from rictus $1\frac{3}{10}$ inch, and from base 1; tarsus 1; middle toe and claw $1\frac{4}{10}$. There is no outward sexual distinction.

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* Forbes' 'Oriental Memoirs,' 2nd edition, vol. i. p. 227.

The preceding description represents what is probably the adult plumage. There is another stage, perhaps indicative of the first moult, in which the pectoral band extends across the breast; and the whole of the lower surface behind this, instead of being white, is of a gray colour, the under plumage being white. From dissection I ascertained that females in both stages had laid eggs. A petrel* nearly allied to the present, and also appearing in two different styles of plumage, was found by me incubating as well in the immature as in the full dress.

P. torquata is not confined to the island of Aneiteum. I have seen it on various occasions off the coasts of Tana and Eramanga, and was assured by a native of the former island that it breeds in his district, which commences about twelve miles to the southward of Port Resolution. On Aneiteum it breeds in burrows on the wooded mountains of the interior of the island, the highest of which attains an elevation of 2788 feet. A young bird, not many days old, and covered with black down, was brought me on the 14th of Febraury, but I have not yet seen an egg. The Aneiteumese name is Katébu.

Description of Pteropus Geddiei,† a new Species of Pteropus.— General colour deep black. A pale reddish yellow patch extends from the occiput backwards across the shoulders, and includes the sides of the neck. Back covered with glossy adpressed black hairs, mixed with a few of a rusty colour; upper surface of upper arm very thinly clad with hairs; fore arm bare. Lower part of back and upper surface of thighs covered with longer and coarser black hairs, reddish at the tips. Head showing many grizzled hairs, and, as well as the throat and whole of lower surface, covered with coarse black fur extending a little way on the membranes, thinly covering the shoulders and thighs, but leaving the fore arms and legs nearly bare; rusty hairs on the sides of the upper jaw, the angle of the lower jaw, between the eyes in a triangular space, and at the base of the ears. Ears rounded at the tip, with rather more than the apical half bare. Total length 12 inches; expanse of membrane 49; occiput to tip of nose $3\frac{1}{2}$; ears $1\frac{2}{10}$ inch; fore arm 6 inches; thumb and claw $2\frac{4}{10}$; index $4\frac{8}{10}$; legs 3; feet to tip of claw $2\frac{1}{10}$.

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* From the Kermadec Isles. Specimens with the MS. name, P. Raoulensis, attached were sent by me to the British Museum several years ago. This bird should be placed by the side of P. Lessoni.

† In honour of the Rev. J. Geddie, who, in common with all the members of his amiable family, not only materially assisted me in forming my collection, while at the same time enjoying his hospitality, but has himself become a collector of zoological specimens for his friends in Nova Scotia and Canada.

While one of the great frugivorous bats, P. funereus, has a range extending from New Guinea southwards into Australia, in which country I have met with it in places about 600 miles apart (Port Essington and the Howick Isles), and a second species stretches at least across New Caledonia, having been shot by me both at Port de France on the west and Kanala on the east coasts, and a third (P. Kerandreni) is diffused over the great Archipelago of Fiji, on the little island of Aneiteum, the extreme width of which is less than nine miles, there are two very distinct species of Pteropus which do not intrude upon each other's districts; the smaller one, so far as I can judge, inhabiting the windward, and the other, which I have been describing, the leeward sides of the island. It has not been thought necessary to institute a comparison between these two last, as they need never be confounded with each other. Of the first, specimens were sent to the British Museum six years ago; but, although I met with the second on one occasion at that period and skinned four individuals, the want of preservatives and the intervention of two very hot days before I could get any, compelled me, with much regret, to throw away the skins. Like all other Pteropi I have met with—nine species in all—P. Geddiei is gregarious, and the sexes generally keep apart; nor could I ever find our when or under what circumstances they meet. At one great place of resort—a thickly wooded bank near the sea—behind a grove of bread-fruit and other trees, these bats are at times to be seen in great numbers, while for weeks, and even months together, there are none in the neighbourhood. At this locality, however, I think their arrival and departure are connected with the ripening of the two annual crops of the bread-fruit, to which they are very destructive. I have never shot any but males at this place, nor have I yet met with the female. The Aneiteumese are fond of these bats as food, and used to spin the fur into cordage used in ornamenting the person. Besides occasionally killing them with stones and short sticks, they sometimes catch them in traps similar to those used in fishing—circular, flat-bottomed baskets made of Flagellaria indica, with a hole at the top for entrance, and some papaw apple for bait. The trap is fixed in one of the trees the bats are known to frequent. In Fiji a similar mode of catching them is practised. On the island of Moala a native one day agreed to take me where I should see some bats, and in due time called out "mbeka!" pointing out among the foliage of an Iambosa tree something dark in motion, at which I fired. My companion was speedily up among the branches like a monkey, and I then could discern a bat-trap set there, from which, with a malicious grin and averted nose, he drew forth and threw down to me two Pteropi, one quite putrid, the other killed by shot. Pteropus Geddiei has its favourite trees for roosting on during the day, generally some wide-spreading fig or banyan is preferred; once, however, I noticed a species of Acacia had been selected as a place of resort. During the day time, and while suspended from the tree, they are readily roused by any unusual noise, such as the crackling of a stick under foot, and are not very easily approached. Like the other large bats they are very tenacious of life, and cling to the branches as long as they possess the requisite strength, and sometimes remain suspended even after death. The males seem to be very pugnacious; I have seen them fighting among themselves on the trees, and a wounded one will furiously attack anything brought in contact with it. With their formidable canine teeth they inflict severe bites, and retain their hold of a mouthful with great tenacity.

The Aneiteumese generic name for Pteropus is Nekrei; the larger species is called Nawathelgau, and the smaller one Nalivatran. This last, besides feeding on the fruit of trees, is said to be fond of the berries of a Vaccinium, a low bush growing abundantly on the lower slopes of the hills.

On a Poisonous Property attributed to Conus textile.—On my first visit to Aneiteum I was told of a shell-fish which, on being incautiously handled, is said to eject a poison, causing, if it comes in contact with the hand, an immediate and peculiar sensation, then numbness of the hand and arm, followed by intense pain, usually severe illness, and not unfrequently death. The native name is Intrag, and the mollusk in question is the well-known Conus textile. Having frequently handled this shell-fish while collecting on coral reefs in the Pacific, Torres Strait, and the N.E. Coast of Australia, without having sustained any injury from it, I was naturally somewhat incredulous in the matter; yet as the general belief—which is never wholly destitute of foundation—was against me, I yielded to it so far as afterwards to handle with caution any live specimen I saw. I was told that the small Intrags and those of certain localities (one of which is near my present residence) are reputed more dangerous than others. The Intrag is not usually considered dangerous unless the animal be touched, which of course no one here will do, except unwittingly, but some of the natives say that it can "blow" the poisonous influence upon the hand of an intruder from the distance of several inches.

On June 9th of the present year, about 10 P. M. I had brought to me a young man, my neighbour Niuenham, who was said to have recently been poisoned by the Intrag, and appeared to suffer intense pain. From what I could learn it seems that he and a companion had been looking for shell-fish by moonlight about two hours previously. N. had picked up in the shallow water something which he did not see distinctly. Immediately on touching it, and while his hand was in the water, he felt a sensation as if some very cold water had been "blown" on the palm of his right hand, and dropped the object, which he saw was an Intrag. Not long afterwards he went home, and soon began to complain of a numbness in the whole of his right arm and hand. This was immediately ascribed to his having touched the Intrag, and his companion went back to the spot for it, carefully picked it up, the shell with the animal retracted, and eventually it was given to me. A bandage was tied tightly round the sufferer's arm at a little below the shoulder, and when I saw him the arm was cold and much swollen, and the pulse about 50, and very feeble. I administered an enormous dose of the solution of muriate of morphia, as he suffered excruciating pain. A medical man in New Zealand having suggested the experiment of burying the hand and arm affected in fresh earth, this was done, but the patient could not endure it long, for he literally writhed in agony while lying on his face on a mat, with his arm in the ground. Meanwhile a man experienced in such matters had been sent for. On arrival he prepared a knife or two of strips of bamboo, and made two deep incisions in the upper part of the arm, one in front, another behind, below the ligature, which had been slackened. About half-a-pint of blood was obtained. Next morning at 8 A. M. I found that the morphia had produced sound sleep during the night, and that the bandage had been removed according to my suggestion. The right arm was swollen, and felt rather cold, but the pulsation was equally strong at each wrist, sixty-three beats to the minute. Means were taken to assist in restoring the natural temperature to the arm, and wine was ordered, to be discontinued on indications of reaction showing themselves. All pain, except from the incisions, had disappeared, and in the course of about a week the patient recovered his usual health. With regard to this case it is right to mention that although satisfied by the circumstantial evidence that contact with an Intrag had produced extraordinary effects, yet I could not separate them satisfactorily from those fairly attributable to the ligature. No pain was felt before the bandage was applied.

A case which terminated fatally may now be mentioned. On the 28th of May, 1859, I went along with the Rev. J. Geddie to see a sick woman, who, fourteen days before, was believed to have been poisoned by her hands having accidentally come in contact with an Intrag while collecting shell-fish on the reef. The whole right hand and arm to within a few inches of the axilla were in a state of gangrene, with the bone exposed in several places. No hæmorrhage, however, had taken place. I could see that numerous small but deep incisions had been made in the arm. There was not, I may mention, as with a light skinned person, the same facility for ascertaining the exisience of a line of demarcation between the living and the dead portions of the body. Apparently, there was sound material enough to render amputation at the shoulder-joint possible, but, unfortunately, on the back of the shoulder, also on the sides of the chest, there were indications of incipient gangrene in the peeling off of the cuticle, and the formation of vesicles, rendering the operation unadvisable, because holding out no hope of saving life. In this case I learned that a tight bandage had been kept on for several days, probably of itself sufficient to induce mortification even in a healthy limb.

These two cases are the only ones of which I can say anything from personal observation, and I shall make no further comment than merely to observe that as I cannot find any special apparatus in the animal of Conus textile, or see any anatomical difference between it and C. arenatus (which is known to be innocuous) after examining both, I feel great reluctance in subscribing even to the universal popular belief on this island of the power of the Intrag to cause injury to man in the manner ascribed to it. A jet from the siphon of the animal might partially account for the first sensation experienced. No puncture or abrasion of the cuticle is ever spoken of, but in some cases, I have been told, the skin has been discoloured,—the word used being "emilmat," which means either blue or green.

On the Fishes of Aneiteum.—Before packing up a collection of fishes I may as well pen a few remarks. As it includes everything brought to me which was neither too large nor too small to be skinned and stuffed conveniently, including upwards of a hundred species, caught with the net, hook, spear, hand or fishing-basket, common as well as rare, it may be looked upon as a fair sample of the fishes of the seas bordering this island, as well as of the fresh-water streams. Taking Cuvier's arrangement as a convenient guide, it may be stated that nearly all the fishes in question belong to the Osseous Series, and that about four-fifths are included in the first order or Acanthopterygii.

Among the Percidæ are several species of Serranus, as well as members of many other genera, the names of which I have no means of ascertaining. Two of these last are confined to the fresh water. Holocentrum is well represented by seven species, either of a brilliant red colour, or of silvery lustre; and there is also a species of the allied genus Missipristis. A solitary Upeneus may be mentioned, also a small Apogon not so brightly coloured as usual.

Of the armed-headed or hard-cheeked fishes a small Ccphalacanthus was brought me; out of the water it can take vigorous leaps for a short time. But the most singular member of this family I have seen here is the Ndrukthannia, possibly a Pterois. It is a handsome fish, upwards of a foot in length, chiefly of a bright red colour, variously streaked and spotted, and remarkable on account of the great length of the dorsal spines and the enormous size of the ventrals and pectorals, the latter of which have the rays prolonged beyond the fin. The cheeks are armed with clusters of prickles, and there are other prickles and spines about the head. The formidable dorsal spines are believed to be capable of inflicting very painful and even dangerous wounds, attributed by the natives to some poisonous property inherent in them.

Of the family Sparidæ a Pagellus is very common, and there are two other fishes (one of a bright green colour) very much elongated in shape, with sharp snouts and strong teeth, the front ones hooked, which are probably of the genus Dentex. A solitary Mœna represents the fifth family.

The Squamipennes muster here in great force, including many species of Chætodon, Heniochus and Holocanthus, also a Chelmon, and some others allied to Pimelepterus. Many of the first, second and fourth of these genera are curiously diversified by black and yellow bands, stripes, and eye-like spots. One Heniochus has a dorsal filament as long as the whole body.

Of Scomberidæ there are few species, all of which, however, go in shoals. Caranx and Vomer are the principal genera.

There is considerable variety among the lancet fishes. Of five species referrible to Acanthurus probably only one belongs to that genus, as now restricted, and the others, which are all of a very dark, almost black colour, to three allied genera. One species is remarkable for the enormous dorsal and anal fins, and this, together with the body being black, has originated a somewhat fanciful resemblance to the large bats (Pteropi), and one name serves for both objects. Two others, with the upper and lowermost caudal rays prolonged, have a curious orange-coloured patch on each side. A Siganus is common, as are also a Naseus and another fish allied to it, but generically differing by having a protuberance instead of a horn on the forehead, and the upper and lower margins of the caudal not prolonged into filaments. The two last come in over the reef in shoals with the flood tide, and inflict painful and troublesome wounds with their sharp lateral cutting plates, while dashing about among the fishermen's legs.

A fresh-water mullet, a foot or more in length, is common in the streams, where, also, are two species of a genus of fishes, which I may place provisionally among the mullets, not knowing its proper position. The first dorsal has six instead of four spinous rays, as in Mugil, both jaws are furnished with numerous rows of close-set teeth, and many of the rays of all the fins except the first dorsal are free at the extremity; but the most remarkable peculiarity consists in a fleshy flap behind the anus. They chiefly frequent still muddy pools and ditches, and bite eagerly at fish or meat bait. One of the two kinds—but perhaps the other is only the young—grows to a foot in length.

Among the members of the Goby family a marine Salarias and a Gobius may be enumerated. There are two fresh-water species (of different genera) belonging to this family; they are fond of resting on the stones in the rapid streams, probably adhering by means of the sucker-like disk formed by the union of the ventrals.

The Labridæ are probably the most numerous, both in species and individuals, among the various families of Aneiteumese fishes. This, I think, is generally the case where coral reefs abound. Although I have seen none of Labrus proper, yet in the collection there are eleven species of Julis, all once exhibiting beautiful colours, two Gomphosi, three Cheilini, an Anampses and a Xirichthys. Of this last it may be observed that, besides being somewhat comprehensive in form, it exhibits another analogy with the dolphins in its remarkable change of colour. When alive it is almost entirely waxy bluish white, but after death various colours in bands, patches and spots made their appearance on the skin for the first time. There is also a green and blue Scarus belonging to this family.

A solitary Aulastomus, which sometimes measures above a yard in length, represents the Fistularidæ.

The Order Malacopterygii does not, apparently, contain many Aneiteumese fishes. Belone, Hemiramphus, Exocetus and Plotosus are the only abdominal ones I know of. The last is carefully handled by the fishermen on account of the barbed spines, of which there is one in the first dorsal and each of the pectoral fins. A Phycis belongs to the first, and a Pleuronectes to the second section of the Subbrachiate Order. The Phycis alluded to may perhaps belong to another genus, as its ventrals consist of two rays each, instead of a single one. The fishes of the third section, or apodous Malacopterygians, are an Anguilla, common in the fresh water, and three or four species of Muræna, Ophisurus and allied genera.

The only Lophobranchiate fishes I know of are two kinds of Syngnathus.

The first or Gymnodontal division of the Plectognathi is represented by a fine large Tetraodon, covered, except, on the belly, with white spots, and a Diodon with long spines directed backwards, with the exception of a few of the foremost ones. The second or Sclerodermal division contains as many as seven species of Balistes, the most singular of which has numerous large, white, eye-like spots, and two kinds of Ostracion very closely resembling each other.

Of the cartilaginous fishes there is only one representative in the collection, a young Carcharias, probably C. melanopterus. Sharks, however, are not uncommon, and I have also seen at least one species of Trygon.

Description of Prisopus Carlottæ, a New Species of Leaf Insect. — Female. Body much depressed, slightly convex above, flat below; whole of upper surface and membranes rugose, also with small tubercles on the body, especially the thorax; lower surface smooth. Antennæ setaceous, nearly half as long as the body, of about twenty-five joints. Wing-covers their own width apart, very small (little more than one-tenth of an inch in length), rounded on outer and posterior edges, and straight on internal margin; wings also very small, when folded reaching the middle of the first abdominal segment, and projecting the tenth of an inch behind the covers. Abdomen of ten segments, slightly widening from the base towards the middle, then tapering to the extremity, with a faint central dorsal ridge above, and two lateral ones on the lower surface; a minute lateral appendage behind the fore legs, and four pyriform plates on each side between the middle and posterior pairs of legs; second abdominal segment and subsequent ones with a leaf-like appendage on each side, rounded at the tip; the first three pairs small, gradually increasing in size, the next three very much larger, and the last three suddenly diminishing in size. Femora dilated externally by a deeply-toothed or scalloped leaf-like fringe; the tibiæ likewise, but in less degree, and the base of the tarsi to a less extent still; the inner margins of the legs also are fringed, but not very conspicuously, except in the case of the middle pair of femora. All these membranous fringes, as well as those of the body, are ciliated. The number of dentations on the outer margin of the femora agrees in three specimens before me, namely, anterior 9, middle 6, posterior 7. Length of body 2½ inches; greatest width $\frac{6}{10}$ths of an inch; length of antennæ 1 inch. The colour is variable; it is either a dull grayish green, finely and irregularly mottled, or silvery gray also mottled, having greenish and yellowish shades, altogether reminding me of some of the lichens. The eggs are one-tenth of an inch in length, elliptical and slightly compressed; a mark on one side resembles the hilum of a seed, and a lid at one end is pushed off by the emerging larva, which is three-tenths of an inch long.

The Aneiteumese name of this insect is "Naling." It is said to be found on the trunks of trees. I have had only three full-grown individuals brought me, all females containing fully developed eggs. The specific name is intended to commemorate the occasional assistance rendered me by Miss Geddie while collecting here, more especially as this is one of her contributions.

JOHN MACGILLIVRAY.

Eagle and Wolf.—Our road led us in sight of the Putrid Sea. We met several herds of cattle, flocks of large birds, and some large eagles. Wolves are very common in these steppes, and they are so bold that they sometimes attack travellers. We passed by a large one lying on the ground with an eagle, which had probably attacked him, by his side; its talons were nearly buried in his back: in the struggle both had died.—'*Stephen Grellett's Memoirs*,' vol. i. p. 459.

Child attacked by an Eagle.—The wife of Zeller devoted herself in very early life to the Lord, and in this she appears to be faithful in endeavouring to perform her solemn vow. When about five years old she was playing on some of the rocky hills of the country; one of their large eagles saw her, and darted down upon her head: a man with a gun, not far distant, watched the motions of the eagle, but did not see the child; he fired and killed the bird at the very moment of his darting upon the child's head; great was his surprise, on coming to the spot, to find the dead eagle by the side of the child. The deep wounds made by his talons in her head show what a narrow escape she had from the voracious bird, and from being wounded or killed by the gun. This dear woman considers that her life, thus spared, is to be wholly devoted to the service of God.—*Id.*, vol. ii. p. 341. *Both communicated by Samuel Gurney, Esq., M.P.*

Late stay of the Fieldfare (Turdus pilaris) *in Cambridgeshire.*—I have just been put in possession of the latest date that I ever knew of a fieldfare being shot in this county before—*i. e.* the 9th of May: with us they usually depart some time in April; I never before knew or heard of one being seen after that time here.—*S. P. Saville; Jesus Terrace, Cambridge; May* 18, 1860.

Anecdote of a Robin.—It is considered by the superstitious a bad omen to be followed by a robin. Mr. N. said the first Lady Albemarle had been feeding some little birds at her window, and one robin in particular had constantly attended her. Lady A. had left her own home on a visit to Mr. Cooke, of Holkham. The next morning a robin flew upon Lady A. as she was seated at the breakfast-table: she exclaimed instantly, "Oh, that is my robin! it has followed me from my home (about fifty miles distant). I am sure it is sent to warn me of death, and I shall die." Very soon afterwards she met with an accident, and died whilst at Holkham.—*Extracted from a private journal, and communicated by Samuel Gurney, Esq., M.P.*

Escaped Canary breeding.—We had a pair of canaries,—young birds of last year,—the hen of which escaped about three weeks ago. We heard of her as being seen by some boys in the woods, but she would not allow herself to be caught. Yesterday, however, she was caught on her nest, but was so roughly handled that she died before reaching us. The nest was in a thick hedgerow; it was formed of roots and dried grass, lined inside with feathers and down from her own breast, which was quite denuded. She was sitting on three eggs, which do not seem to differ from the eggs usually laid by canaries in confinement. It is probable, therefore, that she had paired with her companion, although we were not aware that she had done so previous to her escape.—*P. H. Newnham; Bagshot, July* 10, 1860.

Tree Sparrows.—"During the winter of 1858-9 we had great numbers of the tree sparrow all around Worthing. Many fields were covered with them. They disappeared in the spring. In no other winter since I have been here have we had them in such numbers, although we have had some stragglers each winter."—*Robert Gray; Worthing, May*, 1860. In reply to an inquiry Mr. Gray informs me that, being well acquainted with the tree sparrow, he was able to single them out from the others when flushed, and so shot several, of which he retained one specimen. Mr. Knox says ('Ornithological Rambles in Sussex,' p. 206), the tree sparrow is scarce in Sussex, but that probably it has frequently escaped observation. He too notices it being a winter visitor. Yarrell ('British Birds,' first edition) does not mention the bird as known to be found in either Sussex or Kent, but in the latter county I certainly killed tree sparrows at my native place (on the border of Sussex) between forty and fifty years ago, I believe, though at the period knowing and caring too little about Natural History to take much notice of the variety, or to attempt tracing the extent of its range. However, I have no doubt tree sparrows were (and are?) indigenous in that district, because nests were common in the *outside* of thatched roofs (see Yarrell, as above, p. 470), and the birds I shot belonged to one of the large flocks which always assemble round stubble fields immediately after harvest. Since this variety of sparrow has been so long overlooked in our neighbourhood, I fully anticipate that it will prove to be far more generally distributed than has been and is now supposed.—*Arthur Hussey; Rottingdean, May* 19, 1860.

Migration of, and Trade in, Goldfinches.—I have transcribed the following from a letter recently received. Having known the writer from his boyhood to this time, now above twenty-eight years, I can vouch for his being not only a very intelligent person, but also that his statements may be fully relied upon.—*Id.* "I have for the last four or five years been watching the bird-catching boys, owing to my hearing that they sent from this neighbourhood some four or five hundred dozens of goldfinches each year in October. Not giving credit to such a statement, I have come to the conclusion that it is true nevertheless, for there have been annually from ten to twenty boys and men with their nets within a walk of Worthing, and I have seen one catch from twenty to forty in a morning; they have even caught over one hundred, if they speak true. Supposing they caught upon an average twenty each per day, it would amount to more than I have stated. One told me he knew eight hundred dozen were sent in six weeks from Brighton, Shoreham and Worthing. I cannot speak beyond Worthing, and certainly these bird-catchers do always get a new suit of clothes every November, and also seem to have money to spend at the public-houses for a long time afterwards. Inquiring among (these men) I find they are all of the same opinion, that the goldfinches migrate. This I have found no mention of in any work that has fallen in my way. My own opinion is that in passing Worthing they go along the coast from west to east, very straggling, but very continuous and regular, for a month or six weeks. The male birds fetch from four to six shillings per dozen in London; the hens about two shillings."—*Robert Gray; Worthing, May*, 1860.

Additional particulars of the Trade in Goldfinches.—In a statement I have received from one of the bird-catchers here, he gives the enormous number of 13,848 goldfinches per annum as sent from Worthing alone, but the calculation is so made that it may be somewhat fallacious. Only four of the catchers send the birds to London, these men taking what the others catch at the rate of four shillings per dozen. For their own protection in settling accounts with the London purchasers the above four are obliged to enter in a book the numbers sent. I applied to the most respectable among them, and he has his book still, but two have not kept theirs, so that I could not obtain the numbers correctly; but this young man said he knew exactly how many went out catching, so reckoning each man's take to be equal to those whose birds he sent to London, it gives the prodigious number before mentioned. The birds are sold to the dealers in London at five shillings per dozen the males and two shillings the females (but few of the latter are ever sent, males alone being wanted), which gives a sum of about £288 per annum. This appears to me almost fabulous, yet I must say I have tried for the last three years to disprove it, and cannot; all I have seen goes more to confirm the fact than to weaken it.—*Id.; May* 24, 1860.

Trade in Goldfinches: copy of Bird-catcher's Statement.—Average (?) of goldfinches caught at Worthing in a year:—

January, February and March		None.	
April	about	4	dozens.
May	„	10	„
June		None.	
July	about	5	„
August	„	15	„
September	„	20	„
October	„	750	„
November	„	300	„
December	„	50	„
		1154	

Arthur Hussey; Rottingdean, May 25, 1860.

*Note on the supposed Occurrence of the Hirundo bicolor of North America in England.**—I venture to send for exhibition a skin of the North American Hirundo bicolor of Vieillot, which was formerly the property of my late very good friend Mr. John Wolley, and which there can be little doubt was obtained from a bird killed in this country, though Mr. Wolley, with that admirable caution which distinguished him in recording the reported occurrence (Zool. 3806), was careful to mention that there was "a possibility of mistake" in the matter. I think that perhaps some members of the Society will view this specimen with a certain amount of interest; but, apart from this, my object in its exhibition is mainly to draw the attention of naturalists to a matter which is every day becoming of greater consequence to those ornithologists who chiefly occupy themselves with the Avi-fauna of any one district. I refer to the occurrence within particular limits of stray examples of exotic species. It is not only "British bird" students who find in these alien immigrants a great cause of perplexity. To whatever country we go, we are, perhaps before we have well ascertained the number of the *bonâ fide* species, puzzled by some wanderer turning up exactly where he was least wanted. In my own opinion, the ornithologist must accept his position with all its responsibilities; he chooses to study a class of beings, some of whom, for all sublunary purposes at least, are blest with almost infinite powers of locomotion. He must, therefore, not complain if in the course of a morning's walk here in England, an Australian swift flies in his face, or he picks up a dead crossbill of a Transatlantic species; and he must invoke no *Deus ex machina* in the shape of an auxiliary-screw clipper or a careless aviary-keeper to account for the incident. Facts like these hardly admit of a doubt, and force themselves day by day more and more upon the notice of the thoughtful naturalist. For some time, indeed, European ornithologists have been accustomed to regard the properly authenticated appearance of an exotic species, which there may be good reason to suppose have reached our shores without intentional human aid, as sufficient ground for including it in the list of our birds. But as observers have of late so largely increased, so have these occurrences been more frequently noticed; and it seems absolutely necessary to prescribe some limit to prevent our really native species from being outnumbered by these foreigners. The difficulty is to know where to draw the line; and to this point I would invite the careful consideration of naturalists. It may be all very well to call Thalassidroma Wilsoni and Mergus cucullatus European birds; but because a single individual of Regulus calendulus or Dendræca virens has reached the Old World, it is absurd to include either of those species in its Fauna. I cite these instances, because they are all from that continent whence most of our occasional visitants arrive; so much so, that one is almost driven to the conclusion that there is no *primâ facie* reason why examples of the greater number of birds of Eastern North America should not, *favente zephyro* (the prevailing strong wind in Western Europe), make their appearance on our shores in course of time. Then, on the other hand, the last two additions to the list of so-called "British birds" have been from the opposite quarter. Are Syrrhaptes paradoxus and Xema ichthyaëtus to take their places in the books elucidating British Ornithology by the side of the red grouse and the peewit gull? It appears to me that we gain nothing by deferring a decision on the subject, and

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* From the 'Proceedings of the Zoological Society of London,' February 28, 1860, and obligingly communicated by the author.

I trust that these remarks will not be deemed unnecessary by those who are competent to deal with the matter.—*Alfred Newton; Elvedon, February* 28, 1860.

Occurrence of the Whimbrel (Numenius phæopus) *in Cambridgeshire.*—A friend of mine has sent me a fine specimen of the whimbrel, which he shot at Caldecot, in this county, on the 4th of May, 1860. The whimbrel may be considered an uncommon bird in Cambridgeshire, only one or a pair occasionally occurring, and then in some of our fenny districts, or more commonly in a turnip field, the young tops of which it is particularly partial to.—*S. P. Saville; Jesus Terrace, Cambridge.*

Toads falling in a Shower of Rain. — I was out insect-catching by the side of the river Waveney, about a quarter-past 9 on Friday night, when a thunder-storm came on. I ran for shelter to the buildings at Aldeby Hall. The rain came down in torrents. Just before I was clear of the fens I observed some small toads on my arms, and several fell in my net, and on the ground and paths there were thousands. I am quite sure there were none in my net before I started, as I took a Leucania pudorina out of it. I believe they fell with the rain out of the clouds. Can you enlighten me on the subject? Two other persons have told me that they met with the same occurrence some distance from the spot in which I was situated.—*W. Winter; Aldeby, July* 23, 1860.

[I believe I have rather a disagreeable tendency to smile at showers of fish, frogs and toads; and my correspondent appears to have an idea that I shall be incredulous: nevertheless, I feel it a duty to insert this communication, simply remarking that the fact of toads covering the pathways and ground is by no means corroborative of the supposition that " they fell with the rain out of the clouds:" I think rather the reverse.—*Edward Newman.*]

Gossip on Spiders. By R. H. MEADE, Esq.

SEVERAL years have passed away since I first endeavoured to excite an interest in the study of British spiders through the medium of the 'Zoologist;' and though the difficulties attending the investigation of the subject (the principal of which has been the want of any English systematic work upon these animals) have prevented my attempts from meeting with all the success I could have desired, yet, judging from the numerous communications that I have received at different times from naturalists in almost all parts of the United Kingdom, the seed sown has borne some fruit. I am proud to think that I have been the means of inducing one or two entomologists to take up Arachnology in earnest, and have thus indirectly tended to advance our knowledge of English spiders. I may especially mention the name of my friend Mr. Pickard-Cambridge, who has himself discovered, during the last two or three years, more new British species than had been added to the list for many years before.

I am happy to know that the greatest impediment to the advancement of my favourite pursuit is on the point of being removed; for the long-promised work on British spiders, by Mr. Blackwall, is at last in the press, and the first volume will, I hope, very soon be published by the Ray Society, with numerous and accurate figures by Mr. Tuffin West. As soon as this appears, naturalists will no longer have any excuse for neglecting these most interesting objects of study.

In my earliest communications to the 'Zoologist' I entered into the subject of preserving spiders; and the further experience of years has fully confirmed me in still advocating the plan I first proposed, viz., that of putting up specimens in small glass tubes filled with spirits of wine. For the larger specimens I use the ordinary rectified spirit of the druggists, and for small species two parts of this mixed with one part of water. The only alteration I have adopted is in having the tubes converted into small bottles, by the formation of a slight constriction or neck near the mouth, so that the cork can be compressed and the rapid evaporation of the spirit prevented.

I preserved some specimens for three or four years in a strong solution of sulphate of magnesia; and with a few it answered admirably, but in most cases I found the colours to become dark and altered in the course of time. I put up a number of species in this saline solution, and gave them to the Entomological Society of London five years ago, but I have not seen them since, and should be much obliged if some member who has the opportunity would inspect them, and let me know how they have kept.

During the last two or three years I have had but few opportunities of searching for new British spiders, and consequently have no new captures to record; and, as far as I have had the means of forming a judgment on the subject, I am of opinion that the unusual drought of the last two summers has been very unfavourable to spider life. I spent a few days during the summers of both 1858 and 1859 in a locality in Oxfordshire which I had found particularly rich as a collecting-ground on previous occasions, and in both the seasons I could scarcely find a spider. Vegetation was very much dried up, and the spiders seemed to have evaporated along with the moisture. Mr. Blackwall tells me that he also noticed this scarcity; and Mr. N. B. Ward (the well-known author of 'Observations on the Growth of Plants in Closely-glazed Cases'), when I met him at the Leeds Meeting of the British Association, said he had particularly remarked that spiders delighted in moisture, and were most abundant in wet seasons.

Having mentioned the British Association, I may perhaps be allowed briefly to allude to a paper which I read at the Leeds Meeting in 1858 (which has since been printed in the 'Reports'), on the Anatomy of the Spinning Organs of Spiders. There had long been a difference of opinion among naturalists as to the power which spiders possessed of shooting out their webs. Some thought that they had the power of propelling a thread from their spinnarets with great force and in any direction, and that it was in this way that the filaments of gossamer are formed, and also that threads are stretched between trees divided by a stream of water. On the contrary, others, among whom I may particularly mention Mr. Blackwall, were of opinion that all floating threads must have been drawn out of the spinnarets by a current of air, the spider only emitting a little viscid fluid, and taking advantage of any breath of air that may arise. On carefully dissecting the abdominal organs I found that the glandular sacs which secrete the strong threads in question are all furnished with a highly contractible fibrous coat, which also surrounds the ducts conveying the silky fluid to the spinnarets. This coat bears some resemblance to the fibrous coat of the arteries in man and the higher animals, and, in my opinion, must enable the spider to eject the fluid forming the threads with considerable violence.

Rambling on from one subject to another, we now come to a discovery which has lately been made in the history of spider life, viz., that a small species lives in large numbers, in a gregarious or social state, in the deep subterranean galleries of some of our northern collieries, where it spins extensive sheets of web. The existence of masses of web-like tissue has long been known in these localities, and has before attracted the attention of naturalists; but though these masses have been suspected by some to be the production of spiders, they have generally been looked upon as the mycelia or filamentous portions of Fungi. In the beginning of February last, however, I received a small spider from Mr. Stainton, with the request that I would determine its name. It had been sent to him by Mr. Morison, of Pelton Colliery, Chester-le-Street, Durham, with the information that it was the fabricator of the webs in question. The spider which I received was not quite an eighth of an inch in length, of a yellowish brown colour, and had become dry and shrivelled. It belonged to the genus Neriène, but in its dried state it was impossible to determine its specific name. I was very sceptical as to the power of such a minute creature to fabricate such immense sheets of web as were described, and was even doubtful whether they were animal productions at all, not having had an opportunity of examining them. I expressed these doubts to Mr. Stainton, and said at the same time that the latter point might easily be settled by looking at some of the so-called web with the microscope.

Shortly after this I had the pleasure of hearing from Mr. Morison himself, who sent me a living specimen of the spider, and a portion of web wound round a piece of wood. I immediately found that this was genuine spider's web, which had become much blackened by coal-dust; and adhering to it were numerous minute scales from the wings of small moths (Tineidæ ?), which had evidently been the food of the spiders. The spider itself was an adult specimen of Neriëne errans, a small species which had been described by Mr. Blackwall in the 'Linnean Transactions' (vol. xviii. p. 643), and hitherto had only been found by him occasionally in the fields in Lancashire and North Wales. To be quite certain regarding the identity of the species I obtained several more specimens from Mr. Morison, comprising both adult males and females, and submitted some of them to Mr. Blackwall for his opinion, which coincided with my own. They slightly differed in colour from the ordinary above-ground specimens of Neriëne errans, being of a more dusky tint, but that was probably owing to the dark nature of the locality in which they had lived. Mr. Morison stated to me that the pit (named the Pelton Colliery) in which these spiders were found is 320 feet below the surface of the ground, and also that seventy-five horses and ponies are employed in it. He suggests that the insects upon which the spiders live are probably introduced with the fodder for the horses; and perhaps the spiders themselves were taken down in the first instance in the same manner.

The spiders are met with in the portions of the pit which are not at present being worked, and the webs are generally spun in galleries, through which little or no air passes. When a rent has been made in one of the webs, the little spiders may be counted by scores together, repairing the damage. In one of his letters to me Mr. Morison says, "On passing through the portion of our under-ground workings, last night, in which these webs abound, I observed that the gaps I had made in the webs on my last visit to that quarter were being spun over again; and on one of them I counted twenty-three or twenty-four little spiders busily engaged in mending the rent."

It is quite a new trait in the character of spiders that a number of small individuals should combine together in the adult state to fabricate large webs. The great cobwebs formed in our cellars and outhouses are always constructed by large spiders (such as Tegenaria civilis or Ciniflo similis), which, though living in close proximity to many neighbours, have each their own web and separate retreat, in which they watch for their prey. This tribe of animals, however, seems endowed with peculiar sagacity, which enables them to adapt themselves to new circumstances, and to acquire new habits. In support of this remark I will adduce another illustration, which I will give in the graphic words of my friend Mr. Edwin Birchall, by whom the fact was particularly pointed out to me, though I had noticed it before receiving the letter in which he says:—"Did you ever observe how spiders frequent lamp-posts? The habits of the tribe, lovers of darkness (no doubt because their deeds are evil), would not lead me to expect them in such a locality; so I conclude they go, not because they are attracted by the light, but because moths are. If this is so, is it not a curious development of instinct? I have constantly found not only webs stretched across the glass, but large fellows lying perdus in the corners of the lamp waiting for prey. I cannot comprehend how a spider travelling along a road can arrive at the conclusion that he will find a sinner at the top of a lamp-post, or the development of such a marvellous instinct since the era of lamps. If it be not *reason*, it is surely very much like it." The spider that I have noticed in this situation has been Epeira similis.

I have one more circumstance to mention in reference to the economy of spiders, and then I will bring this gossip to an end for the present. On the 16th of March last I received from Mr. E. Parfitt, of Taunton, a large nest of Agelena labyrrnthica, which he had found attached to the bare twigs of a hedge. It consisted of a sac of compact white silk, containing two or three cocoons, as is usually the case in the nest of this spider. Mr. Parfitt had never noticed it before, and sent it to me thinking it might be rare or curious. This species is very common in many localities, but the point of interest attached to the nest was, that on its arrival at my house it contained a number of small spiders already hatched. I placed it in a box with a glass top, where these little creatures continued to live and spin their webs, for a period of seven or eight weeks, without obtaining any kind of food. During this time they did not appear to grow, or undergo any alteration in shape. I thought it rather an extraordinary circumstance that the eggs of this spider should be hatched so early, and particularly in such an inclement season as the last, and wondered what food the young spiders could find to live upon, unless something had been provided for them by their parent in the cocoons. On looking into Mr. Blackwall's 'Catalogue' I found no mention of the time at which the young spiders usually appear; neither is there any information on the subject in Walckenaer; but on referring to Martin Lister's 'Tractatus de Araneis,' published in 1678, I found my observation fully confirmed. He says that he kept the eggs of this spider (described under titulus xviii.) in a box all the winter, for the purpose of watching them, and found that the young spiders emerged from the eggs in February, and continued to live without alteration and without any food until the middle of April, when he allowed them to escape.

R. H. MEADE.

Bradford, June 21, 1860.

Proceedings of Societies.

ENTOMOLOGICAL SOCIETY.

July 2, 1860.—J. W. DOUGLAS, Esq., President, in the chair.

Donations.

The following donations were announced, and thanks ordered to be presented to the donors:—'Journal of the Proceedings of the Linnean Society,' vol. v. No. 17; presented by the Society. 'The Zoologist' for July; by the Editor. 'The Athenæum' for May; by the Editor.

Election of a Subscriber.

C. Miller, Esq., 17, Silurian Terrace, Dalston, was balloted for, and elected a Subscriber to the Society.

Exhibitions.

Mr. Stevens exhibited a portion of a collection of drawings of European Lepidoptera, in which the wings were formed by transferring the scales from the wings of the insects by a process not ascertained, the bodies and limbs being afterwards beautifully drawn in water-colours. Mr. Stevens stated that the entire collection was contained in seven portfolios, and comprised nearly the whole of the European Micro-Lepidoptera; it had been formed in Germany, by the labour of a lifetime, and now sent to England to be disposed of at a very moderate price.

The specimens exhibited were much admired by the Members present, some of whom stated they had tried various modes of transferring the scales of Lepidoptera to paper, but with very unsatisfactory results.

Mr. Janson exhibited the following Coleoptera, taken at Rannoch by Mr. C. Turner, viz., Otiorhynchus septentrionis, *Herbst*, Scolytus Ratzeburgii, *Janson*, Magdalinus carbonarius, *Fab.*, Rhagonycha paludosa, *Fallen*.

Mr. Janson also exhibited a specimen of Homalota subterranea, *Mulsant.*, a species only hitherto detected in France, which he had found at Mickleham, Surrey, on the 23rd ult., under a stone, in a nest of Formica flava. He also exhibited Ischnoglossa rufopicea and Conosoma bimaculatum, found beneath bark of oaks at Colney Hatch.

Mr. McLachlan exhibited a fine specimen of Chrosis Audouiana, lately caught at Darenth Wood, Kent.

Mr. Douglas exhibited the following Coleoptera, found in the sap exuding from the perforations formed in oaks by the larva of Cossus ligniperda, viz., Cryptarclus imperialis, Epuræa 10-guttata, Tachinus bipustulatus, Homalota cinnamomea, H. hospita, and Omalium planum. He also exhibited Conopalpus testaceus, bred from rotten oak-branches from Richmond Park.

The Rev. H. Clark sent for distribution amongst the Members specimens of Laccophilus variegatus, *Germ.*, taken by him at Pevensey in June last.

Mr. Lewis exhibited specimens of Thiasophila inquilina, found at Charlton in nests of Formica fuliginosa. Mr. Lewis remarked that he had, at the Meeting of the Society held on the 2nd of April last, exhibited a specimen of Telephorus atra, *L.*, and stated it to be a species unrecorded as British; but he had since found that it had been long before included by Mr. Murray in his 'Catalogue of Scottish Coleoptera.'

The Secretary read a letter from R. J. L. Guppy, Esq., Port of Spain, Trinidad, on the habits of an insect allied to, if not identical with, Ranatra linearis of Europe, which he had found in streams in that island.—*E. S.*

Occurrence of Acherontia Atropos near Banff.—A specimen of this insect was taken at the end of June, by some school-children. The species is somewhat rare in this quarter. Is not June an early date for it to be abroad?—*Thomas Edward; Banff, July* 2, 1860.

Description of the Larva of Eupithecia pumilata.—Short and stumpy, tapering slightly towards the head. Ground-colour pale yellowish olive, reddish olive or rusty red. Central dorsal line dusky olive, almost black. Down the centre of the back a chain of dusky arrow-shaped spots, more or less distinct, and becoming merged in the dorsal line on the anterior and posterior segments. On each side a broad ribbon-like stripe, yellowish in the middle, dusky at the edges. The dorsal spots bordered interruptedly with yellow. Spiracular line yellowish. The larvæ from which the foregoing description was taken were reared from eggs sent me by Mr. Hellins, at the end of May, and fed on flowers of Anthriscus sylvestris. They were full-fed at the end of June, and the first perfect insect appeared July 16. Mr. H. tells me he has reared the larva on flowers of Clematis. The pupa, which is enclosed in a slight earthen cocoon, has the thorax and wing-cases pale yellow; abdomen short, yellow; tip red, divisions slightly so. The perfect insect appears in April and May, and again in July and August.—*H. Harpur Crewe; Horndean, July* 18, 1860.

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ase to address, "Edward Newman, 9, Devonshire Street, Bishopsgate, London, to whom Post-Office Orders may be made payable, at the Bishopsgate Street -Order Office. Payment may be also made in Post-Office Stamps.

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